Abbas Askar

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Professional Appointments/Positions

- Lund Observatory, Department of Astronomy and Theoretical Physics, Lund University, Lund, Sweden — **12/06/2018 to present**

Postdoctoral Researcher (Carl Tryggers Fellow – 06/2018 to 05/2020)

- Nicolaus Copernicus Astronomical Center, Warsaw, Poland — **04/11/2013 to 25/05/2018**

Graduate Student/Research Assistant

Education

- **PhD in Astronomy (with distinction)** — **04/11/2013 to 25/05/2018**

Nicolaus Copernicus Astronomical Center (CAMK)
Polish Academy of Sciences, Warsaw, Poland
Supervisor: Dr. Mirek Giersz
Thesis: *"Investigation of Black Hole Populations in Dense Stellar Systems using MOCCA code for Star Cluster Simulations"*

- **Master of Science in Astronomy & Astrophysics** — **04/10/2010 to 27/09/2012**

AstroMundus-Erasmus Mundus Joint Masters Program in Astrophysics
University of Innsbruck, Austria (1^{st} semester)
University of Padova, Italy (2^{nd} & 4^{th} semesters)
University of Belgrade, Serbia (3^{rd} semester)
Master Thesis: *"Optical Counterparts of Ultraluminous X-ray Sources"*
Supervisor: Dr Luca Zampieri (INAF - Padova)

- **Bachelor of Science (Honors) & Bachelor of Arts (Honors) in Liberal Arts & Sciences** — **21/08/2006 to 10/07/2009**

University College Utrecht, Utrecht University, The Netherlands
Double Major in Physical Sciences (Physics & Mathematics)
& Humanities (Philosophy & Religious Studies)

Bachelor Thesis (Science) : *"Peculiar Features in the Onsets of Thermonuclear Flashes on Neutron Stars"*
Supervisor: Dr. Jean in't Zand (HEA, SRON Netherlands Institute for Space Research)

Bachelor Thesis (Humanities): *"The Problem of Redemptive Truth: From Nietzsche to a Post-Metaphysical Culture"*
Supervisor: Dr. Floris van der Burg (University College Utrecht)

- **GCE Advanced & Ordinary Level** — **03/09/2001 to 30/06/2006**

University College Lahore, Lahore, Pakistan
5 years of the British high school curriculum

Refereed Publications in Peer-Reviewed Journals

1. A. Askar, M. B. Davies and R. P. Church: *Formation of super-massive black holes in galactic nuclei I: delivering seed intermediate-mass black holes in massive stellar clusters Monthly Notices of the Royal Astronomical Society*, Volume 502, Issue 2, pp.2682-2700 (2021).
Link: https://ui.adsabs.harvard.edu/abs/2021MNRAS.502.2682A/abstract

2. F. Aros, A. C. Sippel, A. Mastrobuono-Battisti, **A. Askar**, P. Bianchini, G. van de Ven: *Dynamical modelling of globular clusters: challenges for the robust determination of IMBH candidatesMonthly Notices of the Royal Astronomical Society*, Volume 499, Issue 4, pp.4646-4665 (2020).
Link: https://ui.adsabs.harvard.edu/abs/2020MNRAS.499.4646A/abstract

3. J. Hong, **A. Askar**, M. Giersz, A. Hypki, S. Yoon: *MOCCA-SURVEY Database I: Binary black hole mergers from globular clusters with intermediate mass black holes Monthly Notices of the Royal Astronomical Society*, Volume 498, Issue 3, pp.4287-4294 (2020).
Link: https://ui.adsabs.harvard.edu/abs/2020MNRAS.498.4287H/abstract

4. J. Samsing, D. J D'Orazio, K. Kremer, C. L. Rodriguez and **A. Askar**: *Single-single gravitational-wave captures in globular clusters: Eccentric deci-Hertz sources observable by DECIGO and Tian-Qin*
Physical Review D, Vol. 101, Issue 12, article id.123010 (2020)
Link: https://ui.adsabs.harvard.edu/abs/2020PhRvD.10113010S/abstract.

5. K. Belczynski, J. Klencki, C. E. Fields, A. Olejak, E. Berti, G. Meynet, C. L Fryer, D. Holz, R. O'Shaughnessy, D. A. Brown, T. Bulik, S. Leung, K. Nomoto, P. Madau, R. Hirschi, S. Jones, S. Mondal, M. Chruslinska, P. Drozda, D. Gerosa, Z. Doctor, M. Giersz, S. Ekstrom, C. Georgy, **A. Askar**, V. Baibhav, D. Wysocki, T. Natan, W. M. Farr, G. Wiktorowicz, Miller, M. Coleman, B. Farr, J.P Lasota: *The evolutionary roads leading to low effective spins, high black hole masses, and O1/O2 rates of LIGO/Virgo binary black holes. Astronomy & Astrophysics*, Volume 636, id.A104, 40 pp. (2020).
Link: https://ui.adsabs.harvard.edu/abs/2020A%26A...636A.104B/abstract.

6. B. Giesers, S. Kamann, S. Dreizler, T. Husser, **A. Askar**, F. Göttgens, J. Brinchmann, M. Latour, P. M. Weilbacher, M. Wendt, M. M. Roth: *A stellar census in globular clusters with MUSE: Binaries in NGC 3201*
Astronomy & Astrophysics, Volume 632, id.A3, 20 pp. (2019).
Link: https://ui.adsabs.harvard.edu/abs/2019A%26A...632A...3G/abstract

7. M. Giersz, **A. Askar**, L. Wang, A. Hypki, A. Leveque, R. Spurzem: *MOCCA-SURVEY database I. Dissolution of tidally filling star – clusters harbouring black hole subsystems*
Monthly Notices of the Royal Astronomical Society, Volume 487, Issue 2, p.2412-2423 (2019).
Link: http://adsabs.harvard.edu/abs/2019MNRAS.487.2412G/abstract

8. A. Askar, **A. Askar**, M. Pasquato, M. Giersz,: *Finding Black Holes with Black Boxes Using Machine Learning to Identify Globular Clusters with Black Hole Subsystems*
Monthly Notices of the Royal Astronomical Society, Volume 485, Issue 4, p.5345-5362 (2019). Link: http://adsabs.harvard.edu/abs/2019MNRAS.485.5345A

9. D. Belloni, M. Giersz, L.E. Rivera Sandoval, **A. Askar**, P. Ciecielag: *MOCCA-SURVEY database I. Accreting white dwarf binary systems in globular clusters – IV. cataclysmic variables – properties of bright and faint populations. Monthly Notices of the Royal Astronomical Society*, Volume 483, Issue 1, p.315-331 (2019).
Link: http://adsabs.harvard.edu/abs/2019MNRAS.483..315B

10. J. Morawski, M. Giersz, **A. Askar**, and K. Belczynski: *MOCCA-SURVEY Database I: Assessing GW kick retention fractions for BH-BH mergers in globular clusters. Monthly Notices of the Royal Astronomical Society*, Volume 481, Issue 2, p.2168-2179 (2018).
Link: http://adsabs.harvard.edu/abs/2018MNRAS.481.2168M

11. J. Hong, E. Vesperini, **A. Askar**, M. Giersz, and M. Szkudlarek: *Binary Black Hole Mergers from*

Globular Clusters: the Impact of Globular Cluster Properties.. Monthly Notices of the Royal Astronomical Society Volume 480, Issue 4, p.5645-5656 (2018).
Link: http://adsabs.harvard.edu/abs/2018MNRAS.480.5645H

12. M. Arca-Sedda, **A. Askar**, and M. Giersz, *MOCCA-SURVEY Database I. Unravelling black hole subsystems in globular clusters. Monthly Notices of the Royal Astronomical Society* Volume 479, Issue 4, p.4652-4664 (2018).
Link: http://adsabs.harvard.edu/abs/2018MNRAS.479.4652A

13. A. Askar, M. Arca-Sedda, and M. Giersz, *MOCCA-SURVEY Database I: Galactic Globular Clusters Harbouring a Black Hole Subsystem. Monthly Notices of the Royal Astronomical Society* Vol. 478, Issue 2, p.1844-1854 (2018).
Link: http://adsabs.harvard.edu/abs/2018MNRAS.478.1844A

14. K. Belczynski, **A. Askar**, M. Arca-Sedda, M. Chruslinska, M. Donnari, M. Giersz,M. Benacquista, R. Spurzem, D. Jin, G. Wiktorowicz and D. Belloni: *The The origin of the first neutron star – neutron star merger*. *Astronomy & Astrophysics*, Volume 615, id.A91, 13 pp (2018).
Link: http://adsabs.harvard.edu/abs/2018A%26A...615A..91

15. A. Askar, M. Giersz, W. Pych, E. Dalessandro: *COCOA code for creating mock observations of star cluster models. Monthly Notices of the Royal Astronomical Society* Vol 475, Issue 3, p.4170-4185 (2017).
Link: http://adsabs.harvard.edu/abs/2018MNRAS.475.4170A

16. J. Samsing, **A. Askar**, M. Giersz: *MOCCA-SURVEY Database I: Eccentric Black Hole Mergers During Binary-Single Interactions In Globular Clusters. The Astrophysical Journal* Vol. 855, 2, article id. 124, 5 pp.(2018)
Link: http://adsabs.harvard.edu/abs/2018ApJ...855..124S.

17. J. Hong, R. de Grijs , **A. Askar**, P. Berczik, C. Li, L. Wang, L. Deng, M. B. N. Kouwenhoven, M. Giersz, M., R. Spurzem: *The dynamical origin of multiple populations in intermediate-age clusters in the Magellanic clouds. Monthly Notices of the Royal Astronomical Society* Vol 472, 1, p.67-77(2017).
Link: http://adsabs.harvard.edu/abs/2017MNRAS.472...67H

18. D.Belloni, **A. Askar**, M. Giersz, P. Kroupa & H.J, Rocha-Pinto: *On the initial binary population for star cluster simulations. Monthly Notices of the Royal Astronomical Society* Vol 471, 3, p.2812-2828 (2017).
Link: http://adsabs.harvard.edu/abs/2017MNRAS.471.2812B

19. D.Belloni, M. Zorotvic, M. Schreiber, N.W.C Leigh, M. Giersz & **A. Askar**: *MOCCA-SURVEY database I. Accreting white dwarf binary systems in globular clusters – III. Cataclysmic variables – Implications of model assumptions. Monthly Notices of the Royal Astronomical Society* 2017 Vol. 468, 2, p.2429-2446 (2017).
Link: http://adsabs.harvard.edu/abs/2017MNRAS.468.2429B

20. R.d. Vita, M. Trenti, P. Bianchini, **A. Askar**, M. Giersz, G. van de Ven: *Prospects for detection of intermediate-mass black holes in globular clusters using integrated-light spectroscopy. Monthly Notices of the Royal Astronomical Society* Vol. 467, 4, p.4057-4066 (2017).
Link: http://adsabs.harvard.edu/abs/2017MNRAS.467.4057D

21. D. Belloni, M. Giersz, H.J, Rocha-Pinto, N.W.C Leigh, **A. Askar**: *MOCCA-SURVEY database I. Accreting white dwarf binary systems in globular clusters - II. Cataclysmic variables - progenitors and population at birth. Monthly Notices of the Royal Astronomical Society* Vol 464, 4, p.4077-4095 (2017).
Link: http://adsabs.harvard.edu/abs/2017MNRAS.464.4077B

22. A. Askar, M. Szkudlarek, D.Gondek-Rosińska, M. Giersz, T. Bulik: *MOCCA-SURVEY Database - I. Coalescing binary black holes originating from globular clusters. Monthly Notices of the Royal Astronomical Society Letters* Vol. 464, p.L36-L40 (2017).
Link: http://adsabs.harvard.edu/abs/2017MNRAS.464L..36A

23. A. Askar, P. Bianchini, R.d. Vita, M. Giersz, A. Hypki, S. Kamann: *MOCCA-SURVEY Database I: Is NGC 6535 a dark star cluster harbouring an IMBH? Monthly Notices of the Royal Astronomical Society*

Vol 464,3, p.3090-3100 (2017).
Link: http://adsabs.harvard.edu/abs/2017MNRAS.464.3090A

24. D. Belloni, M. Giersz, **A. Askar**, N.W.C Leigh, A.Hypki: *MOCCA-SURVEY database I. Accreting white dwarf binary systems in globular clusters - I. Cataclysmic variables - present-day population. Monthly Notices of the Royal Astronomical Society* Vol. 462, 3, p.2950-2969 (2016).
Link: http://adsabs.harvard.edu/abs/2016MNRAS.462.2950B

25. L. Wang, R. Spurzem, S. Aarseth, M. Giersz, **A. Askar**, P. Berczik, T. Naab, R. Schadow, M. B. N. Kouwenhoven: *The DRAGON simulations: globular cluster evolution with a million stars .Monthly Notices of the Royal Astronomical Society* Vol. 458, 2, p.1450-1465 (2016).
Link: http://adsabs.harvard.edu/abs/2016MNRAS.458.1450W

26. M. Giersz, N. Leigh, A. Hypki, N. Lützgendorf, **A. Askar**: *MOCCA code for star cluster simulations - IV. A new scenario for intermediate mass black hole formation in globular clusters. Monthly Notices of the Royal Astronomical Society* Vol. 454, 3, p.3150-3165 (2015).
Link: http://adsabs.harvard.edu/abs/2015MNRAS.454.3150G

Papers Submitted to Peer-Reviewed Journals & Preprints

1. J. Samsing, D.J D'Orazio, **A. Askar**, and M. Giersz: *Black Hole Mergers from Globular Clusters Observable by LISA and LIGO: Results from post-Newtonian Binary-Single Scattering Interactions In Globular Clusters*
Link: http://adsabs.harvard.edu/abs/2018arXiv180208654S.

2. M. Pasquato, M. Mapelli, **A. Askar**, M. Giersz: *Detecting IMBHs with machine learning: feature-based supervised classification - I. Detecting IMBHs with machine learning: feature-based supervised classification - I.* (Submitted to A&A 2019)

3. M. Arca Sedda, **A. Askar**, M. Giersz: *MOCCA-SURVEY Database I. Intermediate mass black holes in Milky Way globular clusters and their connection to supermassive black holes and their connection to supermassive black holes*
Link: https://ui.adsabs.harvard.edu/abs/2019arXiv190500902A/

Research Monographs/Chapters

Contributed to Chapter 5 ("Dynamical Formation of Stellar-mass Binary Black Holes") of the White Paper for the COST action "Gravitational Waves, Black Holes, and Fundamental Physics (2018)" as a section coordinator and co-author:

• B. Leor, V. Cardoso, S. Nissanke, T. P Sotiriou, **A. Askar**, K. Belczynski, G. Bertone, E. Bon, D. Blas, R. Brito & 192 coauthors. *Black holes, gravitational waves and fundamental physics: a roadmap Classical and Quantum Gravity* Vol. 36, 14, article id. 143001 (2019). Link: https://ui.adsabs.harvard.edu/abs/2019CQGra..36n3001B/abstract.

Published/Accepted Conference Proceedings

1. M. B. Davies, **A. Askar**, R.P. Church: *The Ecology of the Galactic Centre: Nuclear Stellar Clusters and Supermassive Black Holes,* IAU Symposium, Volume 315 (Accepted)
Link: https://ui.adsabs.harvard.edu/abs/2019arXiv190713373D/abstract

2. A. Askar, M. Giersz, , M. Arca Sedda, A. Askar, M. Pasquato, A. Leveque *Stellar-Mass Black Holes in Globular Clusters: Dynamical Consequences and Observational Signatures,* IAU Symposium, Volume 315 (Accepted)
Link: https://ui.adsabs.harvard.edu/abs/2019arXiv190713380A/abstract

3. D. Belloni, M. Giersz, L.E. Rivera Sandoval, **A. Askar**, P. Ciecieląg: *Are most Cataclysmic Variables in Globular Clusters dynamically formed?,* IAU Symposium, Volume 315 (Accepted)
Link: https://ui.adsabs.harvard.edu/abs/2019arXiv190706527B/abstract

4. M. Giersz, **A. Askar**, L. Wang, A. Hypki, A. Leveque, R. Spurzem: *MOCCA-SURVEY database I. Dissolution of tidally filling star – clusters harbouring black hole subsystems,*

IAU Symposium, Volume 315 (Accepted)
Link: https://ui.adsabs.harvard.edu/abs/2019arXiv190800266G/abstract

5. A. Hypki, M. Giersz, **A. Askar**, D. Belloni,A. Leveque: *BEANS – distributed data analysis for numerical simulations,*
IAU Symposium, Volume 315 (Accepted)

6. M. Szkudlarek, D.Gondek-Rosińska, **A. Askar**, T. Bulik, M. Giersz: *Black Hole Binaries from Globular Clusters as Sources of Gravitational Waves* (52nd Rencontres de Moriond on Gravitation (Moriond Gravitation 2017)
Link: http://inspirehep.net/record/1671193/files/1639583_21-26.pdf

7. M. Giersz, N. Leigh, A. Hypki, **A. Askar**, N. Lützgendorf: *Formation mechanisms of IMBH in globular clusters* (MmSAI v.87, p.555 2016).
Link: http://adsabs.harvard.edu/abs/2016MmSAI..87..555G

8. D. Belloni, M. Giersz, **A. Askar**, Hypki: *Cataclysmic variables in globular clusters . First results on the analysis of the MOCCA simulations database* (MmSAI v.87, p.551 2016).
Link: http://adsabs.harvard.edu/abs/2016MmSAI..87..555G

9. A. Askar, M. Giersz, W. Pych, A. Olech, A. Hypki: *MOCCA code for star cluster simulation: comparison with optical observations using COCOA* (IAU Symposium, Volume 312, pp. 262-263 2016).
Link: http://adsabs.harvard.edu/abs/2016IAUS..312..262A

10. M. Giersz, N. Leigh, M. Marks, A. Hypki, **A. Askar**: *Monte Carlo modeling of globular star clusters: many primordial binaries and IMBH formation* (IAU Symposium, Volume 312, pp. 213-222 2016).
Link: http://adsabs.harvard.edu/abs/2016IAUS..312..213G

Talks & Conferences

• Contributed Talk on *" Formation and Growth of Supermassive Black Holes in Galactic Nuclei: Dynamics of Triple Intermediate-mass Black Holes Delivered in Stellar Clusters"* at the Triple Evolution and Dynamics 3 (TRENDY 3 - Virtual Meeting 2021)

• Invited Seminar on *"Formation of gravitational wave sources in star clusters: From stellar to intermediate-mass black holes"* at University of Birmingham (Birmingham, United Kingdom 2020).

• Invited Talk on *"Dynamical formation of gravitational wave sources"* at XIX Serbian Astronomical Conference (Belgrade, Serbia 2020).

• Talk on *"Formation of super-massive black holes in galactic nuclei: delivering seed intermediate-mass black holes in stellar clusters"* at Galaxy Coffee, Max Planck Institute for Astronomy, MPIA (Heidelberg, Germany 2020).

• Talk on *" Formation of intermediate-mass black holes in dense stellar clusters"* at the 13th International LISA Symposium (Virtual Meeting 2020)

• Invited Review Talk on *" Dynamical Formation of Binary Black Holes in Dense Stellar Environments"* at European Astronomical Society (EAS) Annual Meeting 2020, Symposium 5: *What have we learned from the observed population of gravitational wave sources?* (Leiden, The Netherlands/Virtual Meeting 2020)

• Talk on *"Supermassive Black Hole Formation in Galatic Nuclei: The Role of Intermediate-mass Black Holes"* at Compact Objects For All Meeting at Lund Observatory, Department of Astronomy and Theoretical Physics, Lund University (Lund, Sweden 2020)

• Invited Talk on *"Gravitational Wave Sources Originating in Globular Clusters"* at DKGWEM-2020: Gravitational Wave Science in Denmark, Niels Bohr Institute, Copenhagen University (Copenhagen, Denmark 2020)

• Talk on *"Stellar Mass Black Holes in Globular Clusters: Dynamical Consequences and Observational Signatures"* at Galaxy Coffee, Max Planck Institute for Astronomy, MPIA (Heidelberg, Germany 2019).

• Invited Talk on *"Dynamically Driven Mergers of Black Holes in Dense Stellar Environments"* at Astrophysics with Gravitational Wave Detections Workshop (Warsaw, Poland 2019).

• Talk on *"Why Black Holes Matter in Globular Clusters: Dynamical Consequences and Observational Signatures"* at IAUS 351: Star Clusters: from the Milky Way to the Early Universe and MODEST 19 (Bologna, Italy 2019).

• Talk on "How black holes can influence the evolution of globular clusters" at the MWStreams 2018 conference on "Survival of Dense Star Clusters in the Milky Way System" (Heidelberg, Germany 2018)

• Invited Talk on *"Black Hole Populations in Galactic Globular Clusters"* at the SFB 881 International Workshop on Star "Clusters around the Milky Way and in the Local Group" (Heidelberg, Germany 2018)

• Invited to attended meeting of the "Evolution of Rich Stellar Populations & Black Hole Binaries" International Space Science Institute (ISSI) Team as a core participant and presented a talk on *"Black Hole Subsystems in Galactic Globular Clusters"* at the ISSI (Bern, Switzerland 2018).

• Talk on *"Black Hole Subsystems in Galactic Globular Clusters"* at MODEST 18 (Santorini, Greece 2018).

• Invited Seminar Talk on *"Investigating Black Hole Populations in Globular Clusters with MOCCA Code for Star Cluster Simulations"* at Galileo Galilei Department of Physics and Astronomy, University of Padova/INAF-Astronomical Observatory of Padova (Padova, Italy 2018).

• Invited Seminar Talk on *"Investigating Black Hole Populations in Globular Clusters with MOCCA Code for Star Cluster Simulations"* at Eötvös Loránd University (Budapest, Hungary 2018).

• Talk on *"MOCCA-Survey Database I: Binary Black Holes and Intermediate Mass Black Holes in Globular Clusters"* at Numerical Scattering Workshop, Center for Computational Astrophysics, Flatiron Institute, (New York City, USA 2017).

• Talk on *"Gravitational Waves and High Energy Sources Originating From Globular Clusters"* at MODEST 17 (Prague, Czech Republic 2017).

• Invited Seminar Talk on *"MOCCA-Survey Database I: Binary Black Holes and Intermediate Mass Black Holes in Globular Clusters"* at Lund Observatory Seminar (Lund, Sweden 2017).

• Seminar Talk on *"MOCCA-Survey Database I: Binary Black Holes and Intermediate Mass Black Holes in Globular Clusters"* at Nicolaus Copernicus Center Wednesday Colloqium (Warsaw, Poland 2017).

• Talk on *"Coalescing Binary Black Holes Originating from Globular Clusters"* at Heraeus-Seminar 61: Stellar Aggregates (Bad Honnef, Germany 2016).

• Invited Seminar Talk on *"MOCCA-Survey Database I: Binary Black Holes and Intermediate Mass Black Holes in Globular Clusters"* at KIAA/Peking University Lunch Talk (Beijing, China 2016).

• Invited Talk on *"Merging Binary Black Holes Originating from Globular Clusters"* at Astro-GR 2016 Meeting (Benasque, Spain 2016).

• Presented poster on *"Simulating Observations of MOCCA Star Cluster Simulations with COCOA"* at EES 2015 School on Stellar Clusters (Banyuls sur Mer,France 2015).

• Talk on *"Simulating Observations of MOCCA Star Cluster Simulations with COCOA"* at MODEST 15 (Concepcion, Chile 2015).

• Poster presentation, *"MOCCA Code for Star Cluster Simulations: Comparison with Optical Observations using COCOA"* at International Conference of Young Astronomers (Toruń, Poland 2014).

• Poster entitled, *"MOCCA Code for Star Cluster Simulations: Comparison with Optical Observations using COCOA"* (presented by M. Giersz) at IAUS 312: Star Clusters & Black Holes in Galaxies across Cosmic Time (Beijing, China 2014).

• Talk on *"X-ray Bursts"* at the 5th Serbian Astronomical Student Workshop hosted by University of Belgrade and University of Novi-Sad (Belgrade, Serbia 2011).

Prizes & Awards

• PhD Scholarship in Stellar Dynamics, National Science Center, Poland (2013 to 2017)

- Award for Best Poster at International Conference of Young Astronomers (Toruń, Poland 2014)
- Erasmus Mundus (European Commission) Scholarship for Joint Masters Degree in Astrophysics and Astronomy (2010 to 2012) Total Award: 15,000 Euros
- Excellence Scholarship for Undergraduate Studies at University College Utrecht (2006-2009) Total Award: $\sim$ 21,000 Euros
- Merit Scholarship for A Levels at University College Lahore (2004-2006)
- Award for Excellence in Computing, University College Lahore (2005)
- Award for Academic Excellence, Bloomfield Hall School (2001)

Funding & Grants

- PI of the Fysiografen grant awarded by the Royal Physiographic Society of Lund (2019 to 2020) Title: *Evolution of Binaries containing Massive Stars* Total Funding: 13,450 Euros
- Carl Tryggers Fellowship for postdoctoral research awarded by the Carl Tryggers Foundation for Scientific Research (2018 to 2020) Total Funding: 52,500 Euros
- PI of the Preludium grant for PhD students awarded by the Polish National Science Center (2016 to 2018) Title: *Black Hole Binary Zoo in Globular Clusters* Total Funding: 15,750 Euros
- PI of the Nicolaus Copernicus Astronomical Center Grant for Young Researchers (2015 to 2017) Title: *Simulating Mock Observations of Star Cluster Simulations* Total Funding: 3000 Euros

Supervision, Mentoring & Teaching Activities

- Led session on “Astrophysical Origin of Gravitational Wave Sources" for the ’Topics on Theoretical Astrophysics" PhD course at Lund Observatory (Spring 2021)
- Master thesis supervisor of Markus Strickert (Master student at Lund University 2021-2022)
- Completed course on “Learning and teaching in higher education - theory and practice" for pedagogical training (Lund University, Spring 2020)
- Master thesis supervisor of Lucas Hellström (Master student at Lund University 2019-2020)
- Gave a 2 hour lecture on “Neutron stars, pulsars and compact binaries" for the ’ASTM12 - High Energy Astrophysics" masters course at Lund Observatory (Spring 2019)
- Co-supervised summer student projects at Nicolaus Copernicus Astronomical Center:
    - Jakub Morawski (2017 Bachelor Student, Warsaw Observatory)
    - Piotr Kołodziejski (2016 Bachelor Student, Warsaw Observatory)
    - Jakub Klencki (2016 Master Student, Warsaw Observatory)
    - Piotr Adamczyk (2015 Bachelor Student, Warsaw Observatory)
    - Magdalena Szponar (2015 Bachelor Student, Warsaw Observatory)
- Co-supervised and assisted with Masters thesis project of Riko Schadow (Ludwig Maximilian University of Munich, 2015) and research project by Arthur Kuehlwein (Heidelberg University, 2015)

Popular Talks and Public Lectures

- Presented public talk on *“Simulating Star Clusters: Dynamical Evolution to Merging Black Holes”* at Kulturnatten (Culture Night) 2019 at Lund Observatory, Sweden (21^{st} September, 2019).
- Presented public talk on *“Cosmic Explosions: From Supernovae to Colliding Black Holes”* at Knut Lundmark-dagarna 2019 at Lund Observatory, Sweden (13^{th} April, 2019).
- Presented public talk (for high school students) on *“Merging Black Holes in Star Clusters: The New Era of Gravitational Wave Astrophysics”* at NMT Dagarna at Lund Observatory, Sweden (19^{th} March, 2019).
- Presented public talk on *“Astrophysics of Star Clusters”* at Monthly Meeting of Lahore Astronomical Society (LAST) hosted at Zeds Astronomical Observatory, Lahore, Pakistan (4^{th} January, 2019).
- Invited Popular Talk on *“Binary Black Holes and Intermediate Mass Black Holes in Globular Clusters”* at Koło Naukowe Astronomów (Student’s Astronomy Circle), University of Warsaw Observatory (Warsaw, Poland 2017).
- Presented popular talks on ’Evolution of Star Clusters’ at Spotkanie Mlodych (Young Astronomers

Meeting), Nicolaus Copernicus Astronomical Center (2014 and 2016).

Professional Memberships, Service Work and Meeting Organization

- Junior Member of the International Astronomical Union (IAU) since 2019
https://www.iau.org/administration/membership/individual/18933/
- Associate member of the LISA (Laser Interferometer Space Antenna) consortium
- Expert reviewer for the following journals: Monthly Notices of Royal Astronomical Society (MNRAS), The Astrophysical Journal (ApJ), ApJ Letters, Astronomy & Astrophysics (A&A)
- Examination committee member for master student exams at Lund Observatory (2019, 2020)
- Member of LOC and SOC for ELTs for All meeting at Lund Observatory in Sweden (11 to 12 February, 2019).
- Member of LOC for Spotkanie Mlodych (Young Astronomers Meeting) at Nicolaus Copernicus Astronomical Center (2014 and 2016).

Skills & Miscellaneous

Languages

- Urdu (Native)
- English (Fluent)-TOEFL (Computer Based) Score: 273/300 (February 2006)
- Punjabi (Intermediate Level)
- Dutch (Beginner Level)

Computer Skills

- Scientific programming in Python, Fortran, shell scripting, C
- Wolfram Mathematica and MATLAB

Other Activities

- Assembled and setup muon detectors at University College Utrecht (Part of HiSparc project)
- Junior Advisor at University College Utrecht (2007-2008)
- Represented University College Lahore in many nationwide quiz competitions (2001 to 2006)
- Member of University College Lahore debating team in All-Pakistan parliamentary style debates at Under 17 & Under 19 Level between 2001 & 2006